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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,355	06/12/2006	Robert C. Leif	90274U	8971

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EXAMINER	
PERREIRA, MELISSA JEAN	
ART UNIT	PAPER NUMBER
1618	
MAIL DATE	DELIVERY MODE
02/08/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,355	LEIF ET AL.	
	Examiner	Art Unit	
	MELISSA PERREIRA	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/5/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-15 are pending in the application.

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 10 recites the limitation "the concentration of surfactant". There is insufficient antecedent basis for this limitation in the claim.

3. Claim 15 recites the limitation "the sample" in step e). There is insufficient antecedent basis for this limitation in the claim.

4. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation of the statement, "frequently a biologically

active compound" in regards to the analyte is confusing and unclear as it is not understood as to what is intended by the term frequently.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

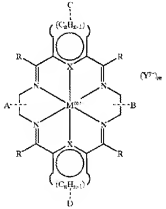
> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 and 6-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Leif et al. (US 6,340,744 B1).

7. Leif et al. (US 6,340,744 B1) teaches of spectrofluorimetrically detectable luminescent compositions comprising a.) at least one energy transfer acceptor lanthanide element macrocycle compound which may be substituted with reactive functional groups at which reaction with analytes can take place (analyte binding species) and has an emission spectrum peak in the range from 500-950 nm; b.) at least one energy transfer donor compound (i.e. 3-valent lanthanide element having an atomic number 59-71, ionic compound of or complex of gadolinium (III)), provided that the lanthanide element of the macrocycle and donor are not identical (abstract; claim 1, column 2, lines 16+; column 8, lines 7-22; column 9, lines 45+; column 10, lines 1-13; column 11, lines 60+). The enhanced luminescence afforded by the composition enables the detection and/or quantitation of many analytes in low concentration without the use of expensive, complicated time-gated detection systems (abstract). The

luminescent compositions of the disclosure are combined with a sample containing an analyte in an aqueous solution (column 11, lines 33-45).

8. The lanthanide energy transfer acceptor macrocyclic compound has the formula (below) wherein M is a metal ion selected from the group consisting of a lanthanide having an atomic number 59-71, an actinide having atomic number 89-103, etc.; R is hydrogen, straight-chain alkyl, etc.; X is selected from the group consisting of nitrogen, sulfur and oxygen which forms a part of a ring structure selected from the group consisting of pyridine, etc.; n is 2 or 3; Y is a negatively charged ion; m is the ionic charge of the metal ion in the macrocyclic complex; y^- is the ionic charge of the counterion in the macrocyclic complex; A,B,C and D are selected substituents selected from the group consisting of hydrogen, straight-chain alkyl, etc. (claim 1; column 2, lines 17-27; column 4).



9.

10. The luminescent compositions of the disclosure emit energy (enhanced luminescence in the range of 500-950 nm) upon excitation in the range of 200-400 nm (column 3, lines 8-12 and 55-60). The luminescent compositions of the disclosure may further comprise a micelle-producing amount of at least one surfactant and may be

lyophilized to form a solid after transfer to an immiscible non-aqueous medium (column 2, lines 16-28; column 10, lines 21-34).

11. It is respectfully pointed out that instant claims 8-13 are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed Cir. 1985). See MPEP 2113.

12. Also, the intended use, such as unitary luminescence enhancing solution is not generally afforded any patentable weight and since the combination leads to the same compounds as claimed, they would be expected to be capable of performing the same intended use. "The recitation of a new intended use for an old product does not make a claim to that old product patentable." *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leif et al. (US 6,340,744 B1) in view of Mathis et al. (US 4,927,923) and in further view of Vallarino et al. (US 5,696,240).

15. Leif et al. (US 6,340,744 B1) discloses spectrofluorimetrically detectable luminescent compositions comprising a.) at least one energy transfer acceptor lanthanide element macrocycle compound which may be substituted with reactive functional groups at which reaction with analytes can take place as well as that stated above. Leif et al. further disclose the concentration range of the energy transfer donor species is in the range from 1×10^{-5} to 1×10^{-3} moles per liter (column 10, lines 4-8) which encompasses the concentration range of the energy transfer donor of the instant claims.

16. Leif et al. does not disclose a cryptate.

17. Mathis et al. (US 4,927,923) discloses macropolycyclic rare earth complexes, namely cryptates which are useful as fluorescent tracers for biological substances in immunological detection or determination techniques using fluorescence. The excitation of the cryptate rare earth complexes enhances the fluorescence characteristics of a rare earth ion as excitation of an isolated rare earth ion produces only a very weak fluorescence because they generally have low molar absorption coefficients e (abstract; column 3, lines +; column 4, lines 1-37).

18. At the time of the invention one ordinarily skilled in the art to substitute the cryptate of Mathis et al. for the macrocyclic chelator of Leif et al. to examine the enhancement of the fluorescence of the luminescent compositions for determination

techniques as excitation of the cryptate rare earth complexes enhances the fluorescence characteristics of a rare earth ion which generally have low molar absorption coefficients e.

19. It is obvious to those skilled in the art to make known substitutions on compounds that are similar in structure and function to observe the effects on the function of such compounds and to use the observations/data to further manipulate a compound to generate the desired effect, such as the enhancement of the fluorescence of the luminescent compositions for use in the detection and/or quantitation of many analytes in low concentration without the use of expensive, complicated time-gated detection systems.

20. In regards to claims 14 and 15:

21. Leif et al. discloses a method for analysis of a sample suspected of containing at least one analyte, frequently a biologically active compound comprising a.) contacting said sample with a functionalized complex of a metal in a reaction medium under binding conditions, wherein the reaction medium in which a sample containing or suspected of containing an analyte is an aqueous solution; b.) adding a luminescence-enhancing amount of at least one energy transfer donor compound; c.) subjecting the reaction medium to excitation energy in the range of 200-400 nm, whereby enhanced luminescence in the range of 500-950 nm is generated; d.) (column 2, lines 28-36 and 53+; column 3, lines 1-19; column 11, lines 33-45); e.) monitoring said luminescence of the reaction medium to measure in said sample at least one of the following: (1)

presence and/or concentration of said conjugate; (2) presence and/or concentration of the product of the interaction of said complex with said binding material (analyte); (3) presence and/or concentration of the product of the interaction of the conjugate with the binding material (analyte) (column 3, lines 1-20). The enhanced fluorescence composition of the invention formed in an aqueous micellar organization can be dried and/or transferred into an aqueous medium and measured in the non-aqueous environment or in the dry state (column 15, lines 13-17).

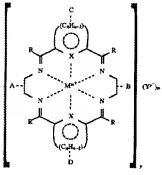
22. Leif et al. further discloses the preparation of EuMac-Avidin/biotinylated agarose beads via the procedures of US 5,696,240. The EuMac-Avidin/biotinylated agarose beads are treated with Gd(III) optimized cofluorescence matrix solution, were incubated, centrifuged and the solvent removed to generate dry beads. The beads were irradiated at 360 nm (example VIII).

23. Leif et al. does not explicitly disclose all the method step of the instant claim 15.

24. Vallarino et al. (US 5,696,240) discloses macrocyclic complexes (below) which encompass the luminescent compositions of Leif et al., wherein M is a metal ion selected from the group consisting of a lanthanide having an atomic number 59-71, an actinide having atomic number 89-103, etc.; R is hydrogen, straight-chain alkyl, etc.; X is selected from the group consisting of nitrogen, sulfur and oxygen which forms a part of a ring structure selected from the group consisting of pyridine, etc.; n is 2 or 3; Y is a negatively charged ion; m is the ionic charge of the metal ion in the macrocyclic complex; y^- is the ionic charge of the counterion in the macrocyclic complex; A,B,C and

D are selected substituents selected from the group consisting of hydrogen, straight-chain alkyl, etc. (column 8, lines 32+; column 11, lines 1+; claim 4).

25. Vallarino et al. further discloses of the coupling of europium-macrocyclic complexes to agarose beads wherein the biotinylated agarose beads are washed and treated/incubated with the europium-macrocycle-coupled avidin solution and then centrifuged and washed thoroughly (example XXIX, especially step 3).

26. 

27. At the time of the invention it would have been obvious to one ordinarily skilled in the art to use the solid support (agarose bead) preparation method of Vallarino et al. US 5,696,240 for the europium-macrocycle-complexes of Leif et al. as Leif et al. discloses the use of this preparation method for the solid support of the europium-macrocycle-complexes.

28. Also, it would also been obvious to one skilled in the art to utilize the solid support europium-macrocycle-complexes of the combined disclosures for the method for analysis of a sample suspected of containing at least one analyte as Leif et al. teaches that the combination of gadolinium (III) complex in the presence of other solutes to the difunctionalized macrocyclic molecules which were taught in Vallarino et al. US 5,696,240 (not excluding the solid support europium-macrocycle-complexes)

provides for enhanced luminescence and enable the detection and/or quantitation of many analytes in low concentrations without the use of expensive, complicated time-gated detection systems (Leif et al. abstract).

Double Patenting

29. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

30. Claims 1,3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4, 27 and 34 of U.S. Patent No. 5,373,093. Although the conflicting claims are not identical, they are not patentably distinct from each other because the spectrofluorimetrically detectable luminescent resonance energy transfer transparent compositions of the instant claims encompass the compounds of U.S. Patent No. 5,373,093 as they both have the same core structures, metal ions, substituents, counterions, etc.

31. Claims 1,3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of U.S. Patent No. 5,696,240. Although the conflicting claims are not identical, they are not patentably distinct from each other because the spectrofluorimetrically detectable luminescent resonance energy transfer transparent compositions of the instant claims encompass the compounds of U.S. Patent No. 5,696,240 as they both have the same core structures, metal ions, substituents, counterions, etc.

32. Claim 14 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,750,005B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method for analysis of an insoluble or insolubilized sample suspected of containing at least one analyte of the instant claims encompasses the method for analysis of a sample containing or suspected of containing at least one analyte of U.S. Patent No. 6,750,005B2 as both methods comprise a macrocyclic acceptor and donor compounds under binding conditions, subjecting the reaction medium to excitation energy in overlapping wavelength ranges and monitoring the luminescence for the presence of the conjugate, etc.

Conclusion

No claims are allowed at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA PERREIRA whose telephone number is (571)272-1354. The examiner can normally be reached on 9am-5pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael G. Hartley/
Supervisory Patent Examiner, Art Unit 1618

/Melissa Perreira/
Examiner, Art Unit 1618